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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/823,861	04/14/2004	Sung-Koog Oh	5000-1-535	6182
33942	7590	12/05/2005	EXAMINER	
CHA & REITER, LLC 210 ROUTE 4 EAST STE 103 PARAMUS, NJ 07652			XU, LING X	
			ART UNIT	PAPER NUMBER
			1775	
DATE MAILED: 12/05/2005				

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/823,861	Applicant(s) OH ET AL.	
	Examiner Ling X. Xu	Art Unit 1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) 17-21 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 April 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>3/24/2005</u> | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Group I, claims 1-16 in the reply filed on 10/20/2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 17-21 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim.

Election was made **without** traverse in the reply filed on 10/20/2005.

The requirement is still deemed proper and is therefore made FINAL.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-3, 5, 8-12 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Maxwell (WO-02/095460).

With respect to claims 1 and 10, Maxwell discloses a polymer holey optical fiber preform comprising a substrate having one or more holes and one of more discrete optical elements are formed therein, each element having a refractive index which is different from the refractive

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index of the substrate (page 2, lines 10-15 and abstract). The discrete elements may be filled in the holes of the preform and may be any size shape or orientation required (page 4, lines 19-25). The size, shape and orientation of the discrete elements can be altered (page 6, lines 10-15). The refractive index is modified by the use of the discrete optical elements (page 5, lines 10-15).

Maxwell also discloses that the discrete elements have a refractive index, which is less than the refractive index of the surrounding preform (page 3, line 10).

With respect to claims 2-3 and 12, Maxwell discloses that the air holes may be rod form and has circle shape, see FIG. 1.

With respect to claims 5, 11 and 14, Maxwell discloses that the fiber preform may be made to a graded index fiber (page 11, lines 20-25). Since the discrete elements have refractive index that is less than the refractive index of the surrounding preform, the refractive index gradient is considered to be gradually increased in the direction away from a center of the optical preform.

With respect to claims 8-9, Maxwell discloses that the preform substrate can be made of polymer (pages 9-10) and substrate has the same polymer composition throughout the preform and therefore, the substrate is considered to have a constant refractive index.

Maxwell also discloses that the substrate is in a cylinder shape (see FIG. 1).

3. Claims 1-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Cryan (US 2003/0026567).

With respect to claims 1-3, 8-10, 12, Cryan discloses a graded index fiber formed of a plurality of fused graded index fiber preform with at least one high index rod arranged in a pre-

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determined pattern with plurality of low index rods. Cryan also discloses that the distributions of the refractive indices of the optical fiber preform are selectively adjusted by providing different arrangement and distributions of the number of rod-shape fiber preform (see Figures and page 2).

Cryan also discloses that the optical preform may be made of polymeric material such as PMMA and TEFLON (page 2, embodiment [0033]) and these polymers would have the constant refractive index.

It should be noted that claims 1-4, 6-13 and 15-16 are product-by-process claims. The finished product of Cryan, after the holes are filled with refractive index adjustment materials, is considered to be a substrate having one or more holes filled with rod-shaped materials.

With respect to claims 4-7, 11 and 13-16, Figure 1A of Cryan shows that the fiber material is arranged that the refractive indices of the materials gradually decrease in a direction away from the center of the preform. Figure 1A also shows that the distributions of the refractive indices along the center axis are different from each other. Figure 3A shows that the fiber material is arranged that the refractive indices of the materials gradually decrease and then increase in a direction away from the center of the preform. Figure 4 shows that the fiber material is arranged that the refractive indices of the materials gradually increase in a direction away from the center of the preform. Figure 4 also shows that the fiber material is arranged that the refractive indices of the materials gradually increase and then decrease in a direction away from the center of the preform.

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-5 and 8-14 are rejected under 35 U.S.C. 102(e) as being anticipated by Kim (US 2003/91306).

With respect to claims 1-3 and 8-12, Kim discloses a rod type polymer preform with radially-varying refractive index (abstract).

With respect to claims 4-5 and 13-14, Kim also discloses that the rod type polymer preform may be a graded-index plastic optical fiber preform or a inverted gradient such as a refractive index profile which increases from the center of a preform to its outer edge (page 5, embodiment [0064]).

It should be noted that claims 1-5 and 8-14 are product –by-process claims. The finished product of Kim, after the holes are filled with refractive index adjustment materials, is considered to be a substrate having one or more holes filled with rod-shaped materials.

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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Claims 4, 6-7, 13 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Maxwell, as applied to claims 1-3 and 10, above, and further in view of the same reference.

As stated above, Maxwell discloses the plastic optical fiber preform as recited in claims 1-3 and 10.

Maxwell does not specify the preform having the refractive index profile as recited in claims 4, 6-7, 13, and 15-16.

However, Maxwell discloses that the refractive index profile can be modified by the use of different discrete optical elements (page 5, lines 10-15). It would have been obvious to one of ordinary skill in the art to modified the discrete optical elements as desired in order to obtain a various refractive index profiles including the refractive index profile as recited in claims 4, 6-7, 13 and 15-16.

6. Claims 6-7 and 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kim as applied to claims 1-5 and 10-14 above, and further in view of the same reference.

As stated above, Kim discloses the plastic optical fiber preform as recited in claims 1-5 and 10-14.

Kim does not specify the preform having the refractive index profile as recited in claims 6-7 and 15-16.

However, Kim discloses that the rod type polymer preform may be a graded-index may be adjusted in order to obtain different refractive index profile (page 5, embodiment [0064]).


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Therefore, it would have been obvious to one of ordinary skill in the art to arrange rod type polymer material as desired in order to obtain different refractive index profile including the refractive index profile as recited in claims 4, 6-7, 13 and 15-16.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ling X. Xu whose telephone number is 571-272-1546. The examiner can normally be reached on 8:00 - 4:30 Monday - Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Deborah D. Jones can be reached on 571-272-1535. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Ling X. Xu  
Primary Examiner  
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